UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/644,395	08/19/2003	Frederik Marcel Van Der Vliet	LT2700	6129

7590 04/05/2006

ATTN: Travis Dodd
LAW OFFICES OF TRAVIS L. DODD, PC
2490 Heyneman Hollow
Fallbrook, CA 92028

EXAMINER	
WOOD, KEVIN S	

ART UNIT	PAPER NUMBER
2874	

DATE MAILED: 04/05/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/644,395	VLIET ET AL.	
	Examiner	Art Unit	
	Kevin S. Wood	2874	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *1/13/06*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3-18,20-22 and 35-63* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3-18,20-22 and 35-63* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *20 January 2004* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *1/13/06*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

NON-FINAL REJECTION

Response to Amendment

1. This action is responsive to the Amendment filed received on 13 January 2006. Claims 1, 17 and 18 are amended. Claims 2, 19 and 23-34 are cancelled. New claims 35-63 are added. Claims 1, 3-18, 20-22 and 35-63 are pending in the application.

2. Based on the Amendment, the rejection of claim 18 under 35 U.S.C. 112, second paragraph, is withdrawn. The claim is no longer indefinite. The previous rejections of claims 2 and 19 under 35 U.S.C. 112, second paragraph, are moot because claims 2 and 19 have been cancelled by the Amendment.

Drawings

3. The drawings are objected to because they are informal (drawn by hand). New corrected drawings in compliance with 37 CFR 1.121(d) are required in this application because the drawings are informal. Applicant is advised to employ the services of a competent patent draftsperson outside the Office, as the U.S. Patent and Trademark Office no longer prepares new drawings. The corrected drawings are required in reply to the Office action to avoid abandonment of the application. The requirement for corrected drawings will not be held in abeyance.

4. The informal drawings are of sufficient quality to permit examination.

Response to Arguments

5. Applicant's arguments with respect to claims 1, 3-18, 20-22 and 35-63 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claim 11 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

8. Claims 16, 50, 59 and 60-63 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is unclear what is meant by the "wherein the thickness of the waveguides is more than 1.4 times the width of the waveguide". It is unclear what is meant by the term "waveguide" and the term "waveguides" within this portion of the claim. Which is referring to the input waveguide and which is referring to the output waveguide(s)? It is assumed for examination purposes only that the input waveguides are to be more than 1.4 times the width of the output waveguide.

Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

10. Claims 1, 3, 10-12, 14, 17 and 35 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 6,973,234 to Hasegawa et al.

Referring to claims 1, 3, 10-12, 14, 17, and 35, the Hasegawa et al. reference discloses an optical device, comprising: multi-mode waveguides such that a plurality of the waveguides serve as input waveguides (50c) and one or more of the waveguides (60) serve as an output waveguide, the waveguides intersecting one another such that light signals traveling along a plurality of the input waveguides are combined onto an output waveguide, at least a portion of the input waveguides including a contraction taper (See Fig. 11) that does not taper vertically, configured to taper the width of the light signal traveling along a portion of the input waveguide. See Fig. 11-13 of the reference along with their respective portions of the specification. The Hasegawa et al. discloses the output waveguide (60) has at least a portion (61) of the waveguide that has a width greater than a width of each input waveguide. The Hasegawa et al. reference also discloses the plurality of light sources (20) for generating the light signals. The Hasegawa et al. reference discloses inactive material between the

waveguides forming trenches. See Fig. 1-13 of the reference along with their respective portions of the specification.

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

12. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

13. Claims 4-9, 15, 16, 18, 20-22, 36, 42-44, 50 and 53-63 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,973,234 to Hasegawa et al. in view of U.S. Patent No. 6,925,228 to Kamei et al.

Referring to claims 6, 7, 16, 18, 20, 36 and 60-63, the Hasegawa et al. reference discloses all the limitations of the claimed invention, except the Hasegawa et al. reference does not appear to specifically disclose the output waveguide includes an

expansion taper. The Kamei et al. reference discloses an output waveguide (36) having and expansion tapered portion (35) for the purpose of minimizing coupling losses when the waveguide is coupled to other components. See Fig. 7-8B of the Kamei et al. reference. Since the Hasegawa et al. reference and the Kamei et al. reference are both from the same field of endeavor, the purpose disclosed by the Kamei et al. reference would have been recognized within the pertinent art of the Hasegawa et al. reference. It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize an expansion taper for the output waveguide for the purpose of minimizing coupling losses when the output waveguide is coupled to another optical component, especially when coupling the output waveguide to a fiber or waveguide having a core larger than the size of the output waveguide. The Kamei et al. reference discloses the expanded output waveguide has a thickness more than 1.4 times the width of the input waveguide. See Fig. 7-8B of the Kamei et al. reference.

Referring to claim 4, the Hasegawa et al. reference does not appear to specifically disclose that the contraction tapers have a contracted end with a width greater than 12 μm. The applicant does not disclose the criticality or an unexpected result from using this range of widths. It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize a contraction taper having a contracted end with a width greater than 12 μm, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

Referring to claim 5, the Hasegawa et al. reference does not appear to specifically disclose that at least a portion of the contraction tapers having a taper ratio in a range of 8:1 to 200:1, the taper ration being a ratio of the taper length over the taper. The applicant does not disclose the criticality or an unexpected result from using this range of taper ratios. It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize a taper ratio 8:1 to 200:1, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

Referring to claim 8, the Kamei et al. reference discloses the expansion tapers (35) expand from a contracted end to an expanded end (36), the contracted end having a width less than 80% of the width of the expanded end.

Referring to claim 9, the Kamei et al. reference does not appear to specifically disclose that at least a portion of the expansion tapers having a taper ratio in a range of 8:1 to 200:1, the taper ration being a ratio of the taper length over the taper. The applicant does not disclose the criticality or an unexpected result from using this range of taper ratios. It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize a taper ratio 8:1 to 200:1, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

Referring to claim 15, the Hasegawa et al. reference does not appear to specifically disclose the waveguides having a thickness between 16 μm and 75 μm and a width of 16 μm to 75 μm. The applicant does not appear to have disclosed the criticality of the claimed dimensions. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use waveguides having a thickness and/or width of 16 μm to 75 μm, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

Referring to claim 21, the Kamei et al. reference does not appear to specifically disclose that the expansion tapers have a contracted end with a width greater than 10 μm. The applicant does not disclose the criticality or an unexpected result from using this range of widths. It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize a expansion tapers having a contracted end with a width greater than 10 μm, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

Referring to claim 22, the Kamei et al. reference does not appear to specifically disclose that at least a portion of the expansion tapers having a taper ratio in a range of 8:1 to 200:1, the taper ration being a ratio of the taper length over the taper. The applicant does not disclose the criticality or an unexpected result from using this range of taper ratios. It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize a taper ratio 8:1 to 200:1, since it has been held

that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

Referring to claim 42, 43, 50, 53-55 and 58-59, the Hasegawa et al. reference in view of the Kamei et al. reference discloses all the limitations of the claimed invention, except the neither reference appears to specifically disclose that one or more of the waveguides has an end facet that is angled at less than ninety degrees relative to the propagation of a light signal. The angling of an end facet of an optical waveguide is well known within the optical communications art. It is often done to minimize the unwanted reflection losses. It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize an angled end facet for one or more of the optical waveguides for the purpose of minimizing the unwanted reflection losses. The Kamei et al. reference also discloses the expanded output waveguide has a thickness more than 1.4 times the width of the input waveguide. See Fig. 7-8B of the Kamei et al. reference.

Referring to claim 44 and 57, the Kamei et al. reference does not appear to specifically disclose that at least a portion of the expansion tapers having a taper ratio in a range of 8:1 to 200:1, the taper ration being a ratio of the taper length over the taper. The applicant does not disclose the criticality or an unexpected result from using this range of taper ratios. It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize a taper ratio 8:1 to 200:1, since it has been held that where the general conditions of a claim are disclosed in the prior art,

discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

Referring to claim 56, the Kamei et al. reference does not appear to specifically disclose that the expansion tapers have a contracted end with a width greater than 10 μm. The applicant does not disclose the criticality or an unexpected result from using this range of widths. It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize a expansion tapers having a contracted end with a width greater than 10 μm, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.
Referring to 60-63,

14. Claims 13, 37-41, 45-49 and 51-52 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,973,234 to Hasegawa et al

Referring to claims 13, 37-39, 45-48 and 51-52, the Hasegawa et al. reference discloses an optical device, comprising: multi-mode waveguides such that a plurality of the waveguides serve as input waveguides (50c) and one or more of the waveguides (60) serve as an output waveguide, the waveguides intersecting one another such that light signals traveling along a plurality of the input waveguides are combined onto an output waveguide, at least a portion of the input waveguides including a contraction taper (See Fig. 11) that does not taper vertically, configured to taper the width of the light signal traveling along a portion of the input waveguide. See Fig. 11-13 of the

reference along with their respective portions of the specification. The Hasegawa et al. discloses the output waveguide (60) has at least a portion (61) of the waveguide that has a width greater than a width of each input waveguide. The Hasegawa et al. reference also discloses the plurality of light sources (20) for generating the light signals. The Hasegawa et al. reference discloses inactive material between the waveguides forming trenches. See Fig. 1-13 of the reference along with their respective portions of the specification.

The Hasegawa et al. reference does not appear to specifically disclose that one or more of the waveguides has an end facet that is angled at less than ninety degrees relative to the propagation of a light signal. The angling of an end facet of an optical waveguide is well known within the optical communications art. It is often done to minimize the unwanted reflection losses. It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize an angled end facet for one or more of the optical waveguides for the purpose of minimizing the unwanted reflection losses.

Referring to claim 40, the Hasegawa et al. reference does not appear to specifically disclose that the contraction tapers have a contracted end with a width greater than 12 μm. The applicant does not disclose the criticality or an unexpected result from using this range of widths. It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize a contraction taper having a contracted end with a width greater than 12 μm, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the

optimum or workable ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

Referring to claim 41, the Hasegawa et al. reference does not appear to specifically disclose that at least a portion of the contraction tapers having a taper ratio in a range of 8:1 to 200:1, the taper ration being a ratio of the taper length over the taper. The applicant does not disclose the criticality or an unexpected result from using this range of taper ratios. It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize a taper ratio 8:1 to 200:1, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

Referring to claim 49, the Hasegawa et al. reference does not appear to specifically disclose the waveguides having a thickness between 16 μm and 75 μm and a width of 16 μm to 75 μm. The applicant does not appear to have disclosed the criticality of the claimed dimensions. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use waveguides having a thickness and/or width of 16 μm to 75 μm, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

Conclusion

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin S. Wood whose telephone number is (571) 272-2364. The examiner can normally be reached on Monday-Thursday (7am - 5:30 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rodney B. Bovernick can be reached on (571) 272-2344. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Kevin S. Wood
Patent Examiner